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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,772	03/28/2001	Michael Petrov	02509/90	2624
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KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			CUNNINGHAM, GREGORY F	
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DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/819,772	Applicant(s) PETROV ET AL.	
	Examiner Gregory F. Cunningham	Art Unit 2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-10,55-63 and 114-117 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-10,55-63 and 114-117 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to communications of amendment received 11/26/2004.
2. The disposition of the claims is as follows: claims 2-10, 55-63 AND 114-117 are pending in the application. Claims 115-117 are independent claims. Claims 1, 54 and 113 have been cancelled. Claims 115 - 117 are newly added. Claims 11-53 and 64-112 have been withdrawn.
3. When making claim amendments, the applicant is encouraged to consider the references in their entireties, including those portions that have not been cited by the examiner and their equivalents as they may most broadly and appropriately apply to any particular anticipated claim amendments.
4. Recommendation is given to cancel claims 11 to 53 and 64 to 112 drawn to a non-elected invention. These claims were only withdrawn in applicant's the amendment filed on 11/26/2004.

Claim Rejections - 35 USC § 112

5. In view of amendment correcting typographical error in claim 114, rejection is withdrawn.
6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
7. Claims 115 – 117 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described

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in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The following four elements comprise claims 115-117:

- a) storing a copy of a first state of the three dimensional mesh model;
- b) performing operations on the three dimensional mesh model, wherein the three dimensional mesh model is in a second state after performing the operations;
- c) storing a record of each of the operations in an ordered list; and
- d) reconstructing the three dimensional mesh model to a state previous to the second state by reapplying at least some of the operations stored in the ordered list to the stored first state of the three dimensional mesh model.

Essentially the model moves from a first state, which has been stored (copied), to a second state after operations are performed on the model's first state. The operations being stored in an ordered list record. Now, reconstruct the model to a state previous to the second state by using (reapplying) at least some of the stored ordered list record operations on the stored (copied) first state.

However, when reconstructing the model, the only state previous to the second state is the first state. So when trying to use at least some of the stored operations to move the model to state previous to the second state, that state can only be the first state, and that state already exists – it was originally stored.

Furthermore, it was the stored ordered list record operations that moved the model from a first state to a second state, how can one use (reapply) at least some of the stored operations to move the model from a second state to a state previous to the second state, which can only be the

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first state. Actually one would conjecture that using at least some of the stored operations would move the model away from the first state, since these operations are at least a subset of the operations that moved the model from a first to a second state.

Unless the second application of using (reapplying) at least some of the stored operations are (1) inverse or reverse operations and/or (2) there exist fractional states.

Even if (1) is true, are the operations commutative? Most likely the stored ordered list is a non-commutative group and so the particular order is essential in moving from a second state to a previous state. Moreover just reapplying a subset “at least some of the operations stored in the ordered list” would not move the model from a second state to a state previous to the second state if the operations were a non-commutative group. Even lacking one member of the ordered list would stop the model short of the previous model state, i.e. first state. So it would appear that both the order and the entire ordered list would be required to move the model from a second state to a state previous to the second state. However if the entire ordered list is reapplied to the previous first state, this will move the model to the second state, which is not a previous state to the second state.

If (2) is true, there is no support in the specification for fractional states.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 115 and 2-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

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- A. Per claim 115, a mental process augmented by pencil and paper markings anticipates the claim. Wherein ‘three dimensional mesh model sketch on paper and carbon paper’ corresponds to “storing a copy of a first state of the three dimensional mesh model”; ‘making markings or erasing paper markings’ corresponds to “performing operations on the three dimensional mesh model, wherein the three dimensional mesh model is in a second state after performing the operations”; ‘a hand written list’ corresponds to “storing a record of each of the operations in an ordered list”; and ‘marking the carbon paper three dimensional mesh model sketch according to a portion of the hand written list’ corresponds to “reconstructing the three dimensional mesh model to a state previous to the second state by reapplying at least some of the operations stored in the ordered list to the stored first state of the three dimensional mesh model.
- B. Per claim 2, ‘hand written list’ corresponds to “storing all of the parameters necessary to repeat the operations”.
- C. Per claim 3, disclosed supra for claim 2.
- D. Per claim 4-10, disclosed supra for claims 115 and 2.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- A. Claim 115 is rejected under 35 U.S.C. 102(b) as being disclosed by a mental process augmented by pencil and paper markings as disclosed supra for 101 rejection.

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B. Per claim 2, 'hand written list' corresponds to "storing all of the parameters necessary to repeat the operations".

C. Per claim 3, disclosed supra for claim 2.

D. Per claim 4-10, disclosed supra for claims 115 and 2.

11. Claims 1-7 and 58-63 are also rejected under 35 U.S.C. 102(a) as being disclosed by Dimsdale, US Patent Number 6,420,698.

A. Per claim 5, "A method for restoring a previous version of a three dimensional mesh model comprising: retrieving a stored copy of the three dimensional mesh model; retrieving an ordered list of operation requests; and performing each operation in the ordered list of operation requests on the retrieved copy of the three dimensional mesh model." is disclosed supra for claim 1, particularly at "() The undo module provides functionality to: Store the 'undo' calls and operands Apply these 'undo' calls when requested and generate a 'redo' stack (278) The undo module interacts closely with the Tool Module as each undo -able tool must provide appropriate calls to the undo module."

and in col. 40, lns. 44-57 at "(259) The database module encapsulates storage and retrieval of the data generated by the application. It should provide rapid access to that data, whether it is stored on disk or in memory, in a transparent manner. This module should be designed to permit a client/server module in which multiple clients operate on the same database. (260) A scheme for checking out objects to be used by an operation seems necessary as well as some form of caching (assuming that disk support for the database is provided). The database should provide a general structure upon which a spatial hierarchy can be imposed for more efficient operation. A structural hierarchy and instancing should also be provided."

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B. Per claim 6, "The method of claim 5 wherein each operation is performed in the same order in which it was originally placed in the ordered list." is disclosed supra for claim 1 and in col. 41, lns. 62-64 at "The undo module records a stack of actions necessary to undo operations in the reverse order in which they were performed by a user."

C. Per claim 7, "The method of claim 6 further comprising the step of: rendering the retrieved copy of the three dimensional mesh model to a display device after each operation is performed." is disclosed supra for claim 6 and in col. 24, lns. 2-4 at "The CGP 40 lets the user interactively change the 3-D view of the data while the data is arriving to get a better idea of the spatial layout of the data." and in col. 45, lns. 54-57 at "(316) Visualization 9. At any time during the data gathering or modeling process, the existing geometrical data can be viewed interactively either in a "crystal-ball/model-in-hand" paradigm or in a "walk-through" mode."

D. Per independent claim 58, this is directed to a article of manufacture for performing the method of independent claim 5 and therefore is rejected to independent claim 5.

E. Per dependent claims 59-63, these are directed to a article of manufacture for performing the method of dependent claims 6-10, respectively, and therefore are rejected to dependent claims 6-10.

12. Claims 116, 55-57, 117 and 114 are rejected under 35 U.S.C. 102(a) as being disclosed by Official notice.

A. Claim 116, "An article of manufacture comprising a computer-readable medium having stored thereon instructions adapted to be executed by a processor, the instructions which, when executed, define a series of steps to be used for managing a three dimensional mesh model, said steps comprising: storing a copy of a first state of the three dimensional mesh model; performing

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operations on the three dimensional mesh model, wherein the three dimensional mesh model is in a second state after performing the operations; storing a record of each of the operations in an ordered list; and reconstructing the three dimensional mesh model to a state previous to the second state by reapplying at least some of the operations stored in the ordered list to the stored first state of the three dimensional mesh model” is disclosed by Official notice which is taken that the art is replete with software, computer-readable medium, that will take an existing three dimensional mesh model from a memory database “first state” and perform a set of operations on said model to reach a sequential second or third or n^{th} state, wherein the operations are also listed and recorded (saved) along with the n^{th} state. The user can then retrieve this saved user session and using the initial “first state” along with the listed operations, of which some of the latter may be removed or deleted according to user choosing to arrived at an $(n^{\text{th}} - 1)$ state.

Examples of such software are MathCAD, MatLab, Excel, and Mathematica.

B. Official notice discloses claim 55, “The article of manufacture of claim 116 wherein the step of storing a record of each of the operations includes: storing all of the parameters necessary to repeat the operations”, supra for claim 116, step A.

C. Official notice discloses claim 56, “The article of manufacture of claim 55 wherein the ordered list contains a record for each operation that has been previously performed on the three dimensional mesh model in the order in which it was performed”, supra for claim 55, step B.

D. Official notice discloses claim 57, “The article of manufacture of claim 116 wherein the step of reconstructing the three dimensional model includes retrieving the stored copy of the first state the three dimensional mesh model; retrieving the ordered list of operations; and performing

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each at least one operation in the ordered list of operations on the retrieved copy of the first state of the three dimensional mesh model”, supra for claim 116, step A.

E. Per independent claim 117, this is directed to a system for the article of manufacture of independent claim 116, and therefore is rejected to independent claim 116.

F. Per dependent claim 114, this is directed to a system for the article of manufacture of dependent claim 55, and therefore is rejected to dependent claim 55.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dimsdale, US Patent Number 6,420,698, as applied to claims 6, above, and further in view of Fujita et al. (US Patent Number 5,850,223), hereafter Fujita.

A. Per claim 8, “The method of claim 6 wherein the ordered list of operations is filtered to exclude at least one record.” is disclosed by Dimsdale supra for claim 6. However, Dimsdale does not appear to disclose “wherein the ordered list of operations is filtered to exclude at least one record.”, but Fujita does in col. 12, lns. 23-42 at “(58) FIGS. 19A to 19D are views showing a shape as it changes during configuration editing. In FIGS. 19A to 19D, solid arrows indicate one editing and dotted arrows indicate one undo processing. In a first state shown in FIG. 19A, a quadrilateral which has four vertexes (V0, V1, V2, V3) is defined. In a second state

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shown in FIG. 19B, a tetrahedron is defined with deleting the vertex V0 from and adding a new vertex V4 to the first state. Since the vertex V0 is deleted, information defining the connection of the vertexes are updated and the vertexes V1 and V3 become vertexes V1a and V3a, respectively.

(59) In a third state shown in FIG. 19C, a pentahedron is defined by adding vertexes V5 and V6 to the second state and the vertex V4 is changed to a vertex V4a by changing the position of the vertex V4. In a fourth state shown in FIG. 19D, the shape in the second state is restored as a result of undo processing on the third state. If undo processing is performed again from the fourth state, the shape returns to the condition of the third state.”

Whereby the undo process is limited to the previous edited state, all other previous states are eliminated (filtered).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ordered lists of undo disclosed by Dimsdale in combination with limited undo commanding disclosed by Fujita, and motivated to combine the teachings because Fujita provides a scaled down version of Dimsdale undo feature.

B. Per claim 9, “The method of claim 8 wherein the at least one excluded record is at the end of the list” is disclosed by Dimsdale and Fujita supra for claim 8. However, Dimsdale does not appear to disclose “wherein the at least one excluded record is at the end of the list”, but Fujita does in col. 5, lns. 27-33 and/or col. 12, lns. 9-15.

Whereby the undo process is limited to the previous edited state, all other previous states are eliminated (filtered) and resulting in end of list.

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Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ordered lists of undo disclosed by Dimsdale in combination with limited undo commanding and end of list disclosed by Fujita, and motivated to combine the teachings because Fujita provides a scaled down version of Dimsdale undo feature.

C. Per claim 10, “The method of claim 8 wherein the at least one excluded record is at least one record removed from an end of the list” is disclosed by Dimsdale and Fujita supra for claim 8. However, Dimsdale does not appear to disclose “wherein the at least one excluded record is at least one record removed from an end of the list”, but Fujita does in col. 12, lns. 9-15.

Whereby the undo process is limited to the previous edited state, all other previous states are eliminated (filtered) and resulting in end of data cells 200 “record”.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ordered lists of undo disclosed by Dimsdale in combination with limited undo commanding and end of data cells disclosed by Fujita, and motivated to combine the teachings because Fujita provides a scaled down version of Dimsdale undo feature.

Response to Arguments

15. Applicant's arguments filed 11/26/2004 with regard to claims 5-10 have been fully considered but they are not persuasive. In claim 5, the interacting with the current state residing in memory (RAM) that is part of the recorded session with the user corresponds to “retrieving a stored copy of the three dimensional mesh model”.

16. Applicant's arguments with respect to claims 114-117, 2-10 and 55-63 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Responses

18. Responses to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

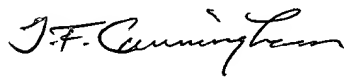
Inquiries

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory F. Cunningham whose telephone number is (571) 272-7784. The examiner can normally be reached on Mon. - Thurs. 7:00 AM to 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gregory F. Cunningham
Examiner
Art Unit 2676

gfc

4/11/2005



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